

## Strategies for Managing Born-Digital Record in University Libraries: A Study of Federal University of Petroleum Resources Effurun

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**Abstract:** This study used the Federal University of Petroleum Resources, Effurun Library as a case study to investigate strategies for managing born-digital records in the university library. The study aims to ascertain the types of born-digital records available in FUPRE library, the strategies used for managing born-digital records, challenges of managing born-digital records. To achieve these objectives, the descriptive survey research was adopted. This research method was considered appropriate by the researchers because it allows for systematic collection and analysis of data to describe characteristics, behaviors, or opinions within a specific population. Hence it will help to provide insights into the current strategies employed by FUPRE library for managing born-digital records. The questionnaire was the instrument used for data collection and the data collected for the study were analyzed using simple percentages, frequency counts, and bar charts. The study found that: born-digital records such as test-based documents (for example Word documents, and Google documents), etc., library presentations e.g., PowerPoint, spreadsheets e.g., Excel, digital documents e.g., PDFs, and electronic memos are the born-digital records are available in FUPRE library; the only policy in place regarding the management of born-digital records is the policy on storage of born-digital records. The study also found that the library's strategies for preserving born-digital records are refreshing, migration, and replication and that their strategy for disposing of born-digital records is deletion while the challenges of managing born-digital records are technological obsolescence, lack/poor digital storage facilities, copyright, and intellectual property rights issues among others. These findings contribute to the understanding of current practices and challenges in managing born-digital records within university libraries, specifically at the Federal University of Petroleum Resources Effurun (FUPRE) library. The study recommends that the library management should formulate policies that will cater to the creation/generation, preservation, transfer/exchange as well as the disposition of born-digital records giving them direction when it comes to managing born-digital records in the library among others.

**Keywords:** Born-Digital, Records Management, Records Management Strategies, University Library, Federal University

### Introduction

Born-digital records are information created, produced, or stored in digital form from their inception. Unlike analog or paper-based records, which are physically produced and stored on tangible media like paper or film, born-digital records exist in digital formats such as audio, video, text, images, and computer code. Organizations and individuals create and store various types of born-digital records, including emails, instant messages, social media posts, web pages, electronic documents, digital photographs, audio and video files, computer programs, and databases (Smith, 2021). Each type has unique characteristics that serve different purposes. For instance, emails and instant messages offer insights into organizational communication patterns and decision-making,

social media posts reflect public sentiment and trends, and digital photographs and audio-video files provide visual and auditory evidence.

The University of Manchester Library, as outlined by [Smith \(2021\)](#), holds various digital records, including Microsoft Office documents, emails, film, image, and sound files. [Jaillant \(2022\)](#) also highlighted Word documents, digital pictures, and video files as types of born-digital archives. [The National Archives \(2021\)](#) defined born-digital records as natively created in digital format, such as emails, text-based documents, presentations, spreadsheets, PDFs, images and videos, CAD drawings, 3D models, datasets, and databases. [Yale University \(2023\)](#) emphasized that born-digital materials, including websites, email, and electronic records, differ from digitized analog items like manuscripts or photographs. [Jaillant \(2019\)](#) described born-digital resources as encompassing a wide range of digital formats, including harvested web content, digital manuscripts, electronic records of institutions, social media accounts, and digital media publications.

The importance of managing and preserving born-digital records is increasingly recognized in galleries, libraries, archives, and museums. University libraries play a crucial role in this process, dealing with research data, administrative records, scholarly publications, and other digital materials ([Rakesh et al., 2021](#)). Effective management requires policies and procedures for acquisition, preservation, and access, covering file formats, metadata standards, storage, security, copyright, and intellectual property rights.

Studies on the management of born-digital records in higher education institutions reveal varied levels of policy development and awareness. [Odhiambo \(2018\)](#) found mixed responses about the existence of formal policies for digital archives management, while [Muchaonyerwa \(2017\)](#) noted the absence of specific policies for digital records accessibility and security in the Eastern Cape's Office of the Premier. This lack of comprehensive policies and frameworks affects the systematic capture, storage, and preservation of born-digital records, posing a threat to their management ([Matlala, 2019](#); [Mnjama & Wamukoya, 2007](#); [Luyombya, 2010](#)).

Preservation of born-digital records involves backup, disaster recovery, and data migration strategies to protect against data loss and ensure future accessibility. Studies indicate various practices and challenges in preserving digital records, from storage media choices to the risks of technological obsolescence ([Odhiambo, 2018](#); [Brady, 2017](#); [Aisha, 2015](#); [Baker, 2014](#); [Adu & Ngulube, 2016](#)).

The management of born-digital records in Nigerian university libraries faces significant challenges, marked by a complex interplay of inadequate funding, the absence of comprehensive management policies, and insufficient staff training. Studies by [Asogwa et al. \(2021b\)](#) highlight the availability of ICT facilities in federal university libraries across Nigeria, yet they underscore a critical underutilization and lack of strategic planning for effective electronic records management. This gap between resource availability and its application is further exacerbated by a widespread lack of preparedness for managing digital records, as evidenced by the findings of [Asogwa et al. \(2021a\)](#), who point to an alarming shortfall in both policy development and the physical infrastructure necessary for digital records management. The situation is compounded by the librarians' attitudes towards digital records management in South-South Nigeria, where [Amina & Emecho \(2018\)](#) identify a prevalent reluctance to adopt digital records management practices. This reluctance is often rooted in a combination of insufficient training and a lack of awareness about the benefits and necessities of modern digital records management systems. Additionally, [Iwhiwhu \(2005\)](#) draws attention to the absence of structured records management programs or policies within Nigerian universities, highlighting an ad hoc approach to records administration that neglects established records management principles. These studies collectively paint a picture of a sector struggling to align its digital records management practices with both local needs and global best practices, calling for a concerted effort towards policy formulation, infrastructure development, and capacity building in the management of born-digital records within Nigerian university libraries.

Despite the growing body of research on the management of born-digital records in Nigerian university libraries, specific gaps remain notably unaddressed, particularly in the context of unique institutional challenges such as those faced by the Federal University of Petroleum Resources Effurun (FUPRE). One such gap is the nuanced understanding of how institutional characteristics—such as FUPRE's specific academic focus on petroleum resources—impact the types of born-digital records generated and the strategies required for their management. Furthermore, existing literature often overlooks the influence of local cultural and organizational factors on the adoption of digital records management practices. For instance, there is limited exploration into how the administrative and academic culture within Nigerian universities influences the prioritization of digital records management initiatives. Additionally, while studies have highlighted challenges related to funding, policy, and training, there is a scarcity of research investigating the effectiveness of specific strategies implemented to overcome these hurdles in the Nigerian context. This includes the lack of detailed case studies on successful digital records management models within similar educational settings that could offer valuable insights for institutions like FUPRE. Moreover, the role of inter-departmental collaboration in enhancing digital records management, a critical aspect given the interdisciplinary nature of many academic programs at FUPRE, remains underexplored. Addressing these specific gaps would not only contribute to a deeper understanding of the complexities involved in managing born-digital records within Nigerian universities but also offer practical guidance tailored to the unique needs and challenges of institutions like FUPRE.

The study adopts a descriptive survey method to explore born-digital records management at the Federal University of Petroleum Resources, Effurun. It aims to describe the current management strategies, identify challenges, and gather stakeholder opinions for policy development and decision-making in university libraries' digital records management (Rahman, 2021; Masenya, 2020; Ejiroghene, 2020).

As digital technologies advance, managing and preserving born-digital records poses new challenges for university libraries. The study seeks to fill gaps in literature regarding the management of born-digital records, particularly in Nigerian universities, by examining the strategies employed by the Federal University of Petroleum Resources, Effurun. The objectives include identifying types of born-digital records in the FUPRE library, ascertaining management strategies, and identifying challenges in managing these records.

The significance and potential implications of research into the management of born-digital records extend far beyond the academic confines of the Federal University of Petroleum Resources Effurun (FUPRE) and touch on broader academic and administrative spheres within similar institutions. By delving into the unique challenges and strategies pertinent to FUPRE's context, this research stands to offer a blueprint for policy formulation and refinement in digital records management. For FUPRE, the findings could herald a new era of enhanced digital stewardship, where records are not only preserved but also optimized for accessibility and utility, supporting the university's mission in research, teaching, and community service. Furthermore, by identifying effective management strategies and pinpointing specific areas for improvement, such as staff training or infrastructure development, the research offers actionable insights that could lead to significant advancements in how digital records are curated and leveraged for academic excellence. For universities across Nigeria and similar contexts globally, the study's outcomes could serve as a benchmark for evaluating their own practices against identified best practices, fostering a culture of continuous improvement and innovation in digital records management. In the broader scope, this research could influence policy at the national or sectoral level, advocating for standards and guidelines that embrace the complexity and diversity of digital records in higher education institutions. Ultimately, the research not only underscores the critical importance of adeptly managing born-digital records in today's digital age but also illuminates the path toward realizing the full potential of these digital assets in enhancing academic quality, institutional accountability, and the preservation of intellectual heritage.

## METHOD

This study employed a descriptive survey method, which is well-suited for systematically collecting and analyzing data to describe the characteristics, behaviors, or opinions of a specific population. Such an approach is particularly beneficial for gaining insights into the current strategies for managing born-digital records within university libraries, identifying faced challenges, assessing the effectiveness of existing methods, and gathering stakeholder opinions for improvement.

The research focused on the library staff of the Federal University of Petroleum Resources, Effurun, comprising 35 individuals—14 librarians and 21 library officers. The choice of the FUPRE library aimed to explore born-digital records management in a specialized academic setting, thereby contributing to the development of management practices in Nigerian university libraries and inspiring innovative approaches across similar institutions globally. Given the manageable size of this group, the total enumeration sampling technique was applied, enabling the inclusion of the entire population in the sample.

Data collection was conducted through a structured questionnaire, designed by the researchers to elicit reliable information from the respondents. This instrument facilitated a detailed understanding of the current practices and challenges in managing born-digital records. The analysis of the collected data utilized simple percentages and frequency counts, complemented by bar charts for a visual representation of the results. This methodology ensures that the findings can significantly inform decision-making and policy development for digital records management in university libraries.

## RESULTS

### Types of Born-Digital Records Available in FUPRE Library

In the digital era, the scope of resources managed by academic libraries has expanded considerably to include a diverse array of born-digital records. These digital assets are integral to the academic fabric of institutions, serving a pivotal role in administrative, educational, and research activities. The Federal University of Petroleum Resources, Effurun (FUPRE), as a forward-thinking entity, has integrated various digital resources to cater to its academic community's evolving needs. To explore the extent of this integration and the prevalent types of digital records, a survey was conducted among the library staff. The findings, as depicted in [Figure 1](#), shed light on the types of born-digital records that have been embraced by the FUPRE library. These insights not only reflect the current state of digital asset management in the library but also serve as an indicator of the digital competency and resource availability to support the institution's educational objectives.

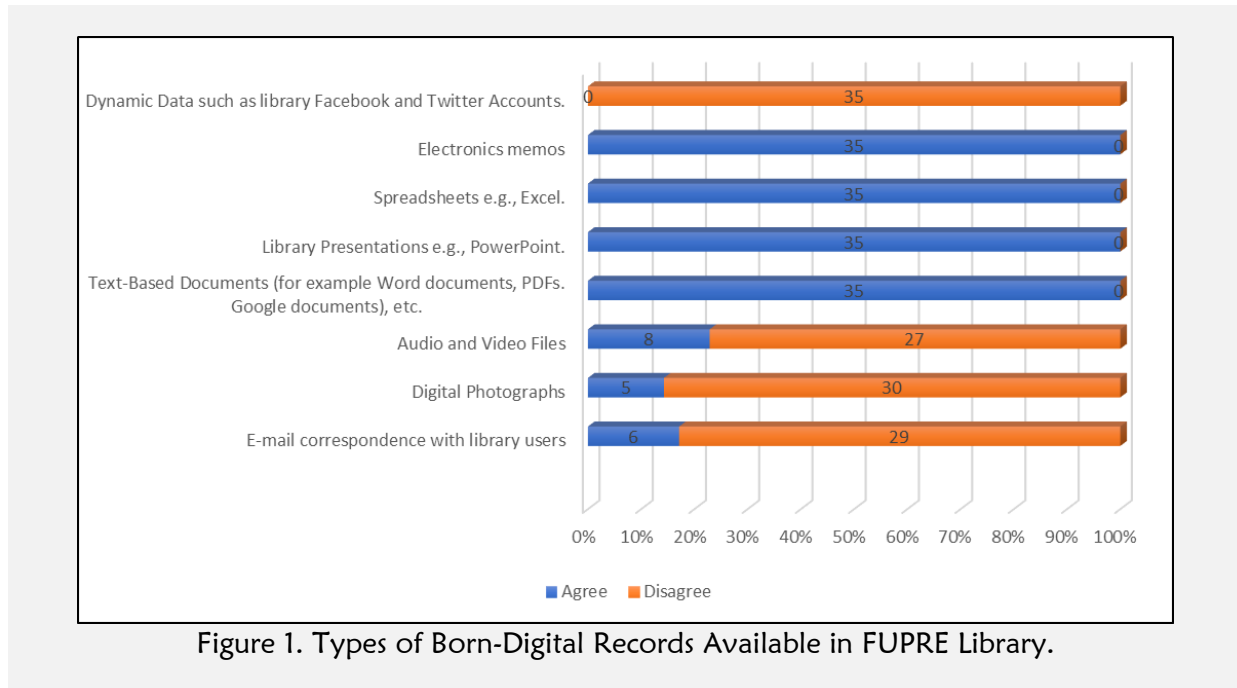
This bar graph, labeled as [Figure 1](#), illustrates the survey responses regarding the types of born-digital records available in the library of the Federal University of Petroleum Resources Effurun (FUPRE). The graph is divided into two main categories for each type of record: those who 'Agree' and those who 'Disagree', indicating the presence of various categories of born-digital records in the library.

From the graph, it's apparent that there is a unanimous agreement (100%, 35 respondents) that text-based documents (like Word documents, PDFs, and Google documents), electronic memos, library presentations (such as PowerPoint), and spreadsheets (like Excel) are available as born-digital records in the FUPRE library. These categories are the most commonly recognized types and are likely the most integral to the library's operations.

In stark contrast, there is a significant majority who disagree that certain types of records are maintained. These include e-mail correspondence with library users (disagreed by 29 respondents or 82.9%), digital photographs (disagreed by 30 respondents or 85.7%), and audio and video files (disagreed by 27 respondents or 77.1%). This suggests that while the library maintains core administrative and academic records, it might not systematically manage or recognize other types of digital media as part of its digital records collection.



Furthermore, dynamic data such as content from the library's Facebook and Twitter accounts are not recognized at all (0% agreement) as born-digital records in the FUPRE library. This indicates a potential gap in the library's digital records management, particularly in the area of social media and other dynamic content, which are increasingly important for engagement and communication in academic institutions.



### Strategies for Managing Born-digital Records

Navigating the digital landscape requires agile strategies for managing the ever-growing volume of born-digital records within academic libraries. At the Federal University of Petroleum Resources, Effurun (FUPRE), the library's approach to handling these digital assets is pivotal to safeguarding their integrity and accessibility. As digital records become increasingly central to the library's operations, understanding the current management strategies in place is crucial. The recent survey conducted at FUPRE library reveals insightful data about the institutional practices for storing, preserving, and disposing of born-digital records. These findings, as illustrated in Figure 2, not only highlight the library's adaptability and resourcefulness but also pinpoint areas where policy development could further strengthen the management of these indispensable resources. The introduction of the strategies employed at FUPRE library serves as a crucial lens through which we can examine the efficacy of digital record-keeping in an era where the preservation of digital information is as significant as its creation.

Figure 2 provides a detailed examination of the policies and strategies related to the management of born-digital records at the Federal University of Petroleum Resources, Effurun (FUPRE) library. The survey results indicate a unanimous absence of policies on the creation, preservation, transfer, and deletion of born-digital records, with all respondents (35 or 100%) signaling their absence. Interestingly, a majority of the respondents (22 or 62.9%) confirmed the existence of a storage policy. Storage strategies for born-digital records predominantly involve physical devices, with the majority of respondents affirming the use of flash drives (85.7%), hard disks (82.9%), CD/DVD ROMs (100%), and personal devices such as mobile phones and tablets (85.7%). The use of database systems like Google Drive and D-Space for storage, however, is notably less prevalent, with 80% of respondents indicating these are not utilized.

In terms of preservation strategies, refreshing, migration, and replication are broadly recognized by the respondents (85.7%, 88.6%, and 100%, respectively) as the methods in place, while encapsulation, stabilization, and ingestion are less accepted, with a majority indicating

disagreement with these practices. As for the disposition of records, deletion is the unanimously agreed-upon method (100%), with archiving on servers like D-Space being less common, as 74.3% do not agree with it as a method.

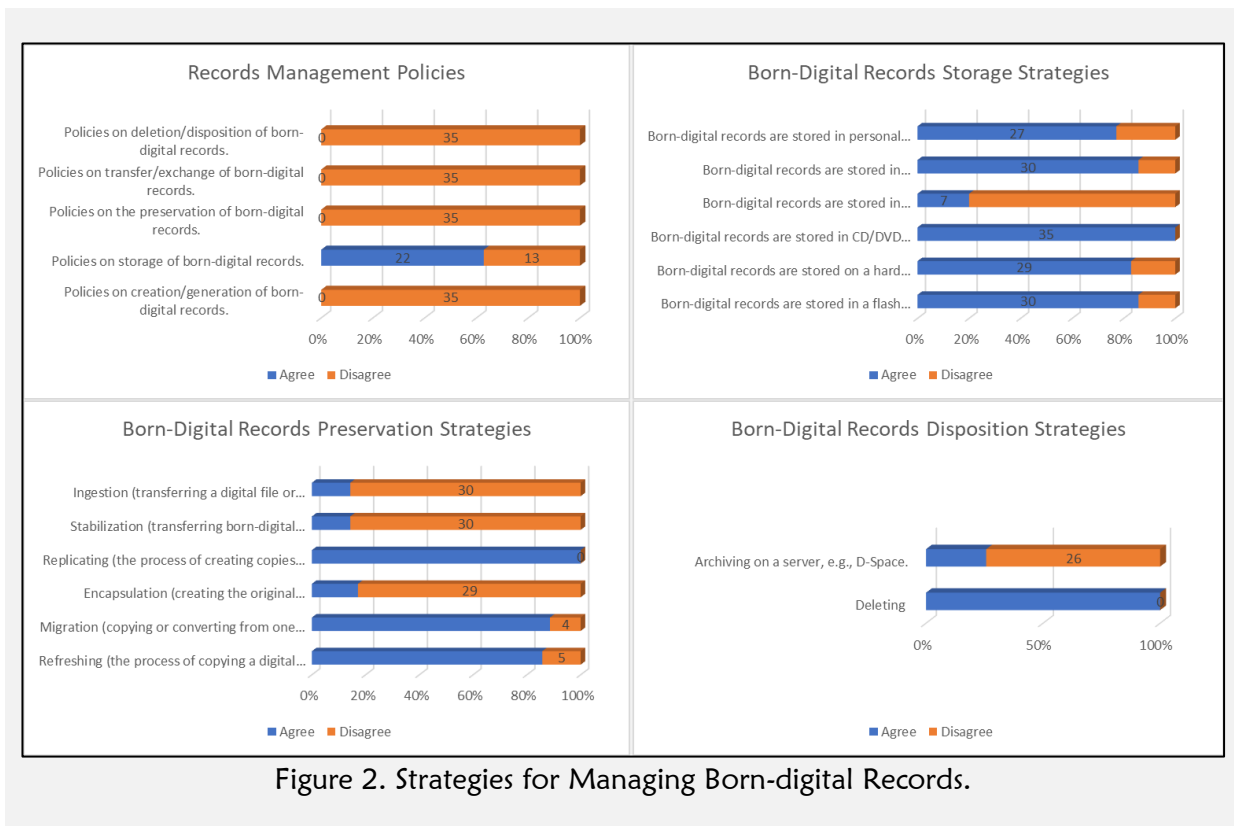


Figure 2. Strategies for Managing Born-digital Records.

The survey results from the Federal University of Petroleum Resources Effurun (FUPRE) Library reveal a detailed picture of the strategies for managing born-digital records, encompassing aspects of policy formulation and the practical application of storage and preservation techniques. Notably, the survey underscores a significant void in policy-making for the management of born-digital records—there is a unanimous acknowledgment among respondents of the absence of policies concerning the creation, preservation, transfer, exchange, and deletion of these records. However, it's apparent that the library has taken steps to establish policies on storage, with a majority of staff affirming their existence.

In practical terms, the library leans heavily towards traditional physical storage devices. Flash drives, hard disks, and CD/DVD ROMs are predominantly utilized, confirmed by the majority of respondents, while personal computing devices also play a significant role in the storage strategy. Interestingly, the adoption of database systems or cloud-based storage solutions like Google Drive and D-Space is limited, hinting at either a preference for or a necessity of tangible storage mediums over digital solutions.

When it comes to preservation strategies, replication and migration of data are the most widely recognized and practiced, as indicated by the unanimous agreement on replication and a majority agreement on migration. Refreshing data is also a common practice; however, there is a notable lack of consensus or practice regarding more sophisticated methods such as encapsulation, stabilization, and ingestion. This might reflect either a gap in knowledge or the challenges associated with implementing these advanced preservation strategies.

For the disposition of born-digital records, deletion is the sole method recognized and utilized by all respondents. The lesser extent to which archiving on servers like D-Space is acknowledged points towards an operational preference or a lack of facility for long-term digital preservation within the institution.

### Challenges of Managing Born-Digital Records

In the quest to navigate the complex terrain of digital librarianship, the Federal University of Petroleum Resources, Effurun (FUPRE) library confronts an array of formidable challenges. As illustrated in Figure 3, the library's endeavor to manage born-digital records is fraught with obstacles ranging from the rapid pace of technological change to the intricacies of intellectual property laws. These challenges are not mere stumbling blocks but are emblematic of the broader struggles faced by academic libraries in the digital age. Understanding the nature and scope of these challenges is essential, as they not only impede daily operations but also influence the strategic direction of the library's future. This discourse sets the stage to delve into the specific impediments identified by the FUPRE library staff, offering a revealing glimpse into the frontline battles in preserving the digital corpus for posterity.

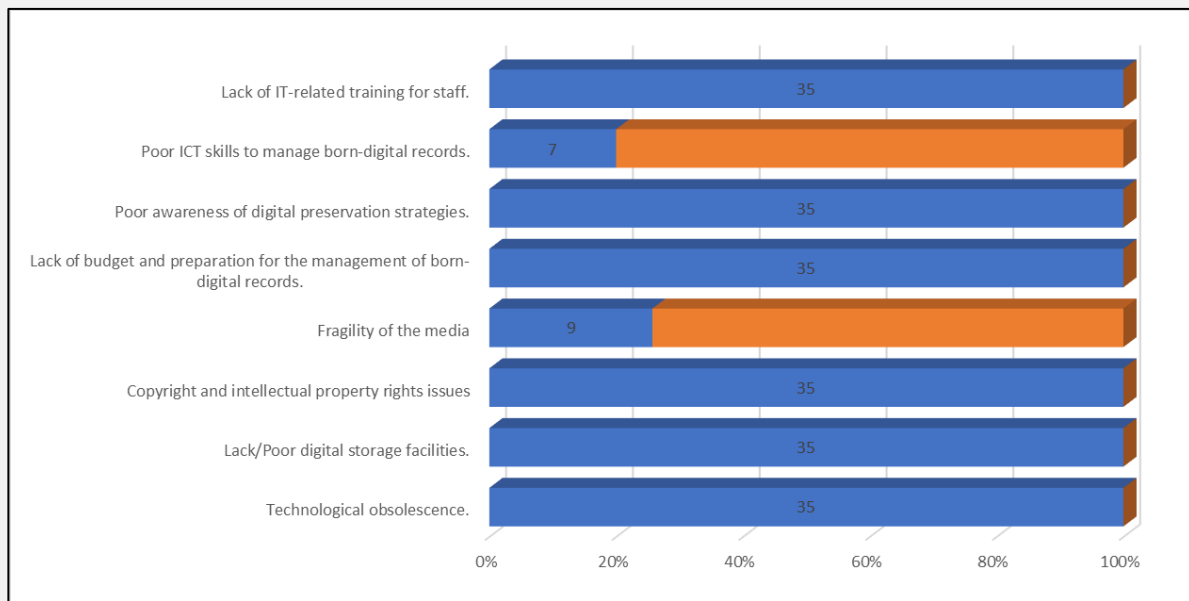


Figure 3. Challenges of Managing Born-Digital Records.

Figure 3 vividly illustrates the consensus among the staff at the Federal University of Petroleum Resources Effurun (FUPRE) Library regarding the challenges they face in managing born-digital records. A full acknowledgment from all participants (35 in number) underscores the pressing issue of technological obsolescence, which reflects a reality where evolving technologies can render current formats and media unreadable in the near future. This unanimous view extends to the inadequacy of digital storage facilities at the library, signaling a critical need for better infrastructure to store and preserve the growing volume of digital records.

Equally recognized by all respondents is the challenge posed by copyright and intellectual property rights, which suggests that the library must navigate a complex legal landscape in its handling of digital content. Another unanimous concern is the lack of budget and preparatory measures for managing born-digital records, highlighting financial and planning barriers that preclude the implementation of effective management practices.

The survey also reveals an institution-wide concern about the poor awareness of digital preservation strategies among library staff, hinting at a significant gap in knowledge that could affect the preservation and accessibility of digital records. Complementing this is the unanimous acknowledgment of a shortfall in IT-related training for staff, a factor crucial for the effective handling of born-digital records.

Interestingly, the concern for the physical fragility of the media, while recognized, does not resonate as strongly, with only 9 respondents identifying it as a challenge. This could indicate

that issues surrounding the physical robustness of storage media are not as pressing or perhaps are overshadowed by the more urgent technological and infrastructural concerns.

Finally, Figure 3 shows that poor ICT skills to manage born-digital records are perceived as a challenge by a minority (7 respondents), which may suggest that while training needs exist, they are not uniformly felt across the entire library staff. This might reflect varying levels of comfort with technology or differing roles within the library, which influence perceptions of this challenge's significance.

## DISCUSSION

This study confirmed that text-based documents (such as Word documents and Google documents), presentations (e.g., PowerPoint), spreadsheets (e.g., Excel), PDFs, and electronic memos constitute the array of born-digital records available in the FUPRE library. These findings align with those of [The National Archives \(2021\)](#), which lists similar items as examples of born-digital records, underscoring the standardization of such records across various institutions.

The research identified a notable gap in FUPRE library's policy framework, revealing that the only established policy pertains to the storage of born-digital records. This situation echoes the concerns raised by [Muchaonyerwa \(2017\)](#) regarding the lack of comprehensive policies for the management of digital records and is further supported by [Matlala's \(2019\)](#) findings on the absence of organizational policies for digital preservation. The consistency of these findings across different studies highlights the prevalent issue of policy inadequacy in the management of born-digital records.

In terms of storage strategies, the FUPRE library relies on various media including flash drives, hard disks, CD/DVD ROMs, and personal devices, corroborating [Aisha's \(2015\)](#) findings on storage media preferences among university libraries in Nigeria. Preservation strategies at FUPRE involve refreshing, migration, and replication, practices that are in agreement with those documented by [Matlala \(2019\)](#). These strategies illustrate the pragmatic approaches libraries employ in response to their technological and resource environments.

The study also brought to light challenges such as technological obsolescence, insufficient digital storage facilities, and copyright issues, which are in line with challenges identified by [Rahman \(2021\)](#) in the context of Bangladeshi university libraries. These findings suggest that such challenges are not localized but rather global in nature, albeit potentially affected by local conditions such as technological access, budgetary allocation, and institutional culture.

The examination of recent studies sheds light on the intricate challenges associated with managing born-digital records in university libraries, revealing both technological and organizational hurdles that institutions like the Federal University of Petroleum Resources, Effurun (FUPRE) must navigate. For instance, the University of Illinois at Urbana-Champaign Library's experience with diverse digital content formats emphasizes the necessity for adaptable technological frameworks and comprehensive format registries to ensure the accessibility and preservation of digital records over time ([Rimkus et al., 2020](#)). This scenario mirrors the potential challenges FUPRE faces, highlighting the importance of developing flexible preservation policies and acquiring software knowledge essential for accessing various file types. Furthermore, [Cocciolo's \(2014\)](#) investigation into the social and cultural barriers to born-digital institutional archiving underscores the significance of fostering a digital preservation culture within organizations. This suggests that for FUPRE, overcoming such barriers involves not just technological solutions but also the promotion of organizational practices that encourage the active participation of staff in digital archiving processes.

Additionally, practical approaches to managing born-digital collections, as demonstrated by Stanford University Libraries with the STOP AIDS Project records, illustrate the potential for applying digital forensics tools to capture and process digital content effectively ([Wilsey et al., 2013](#)). These methodologies could offer FUPRE valuable insights into handling similar challenges, especially those related to obsolete media formats and the sheer volume of digital files. Moreover, the study on digital data sets management in Pakistani university libraries by [Shah et al. \(2023\)](#)



presents a broader perspective on the opportunities and challenges inherent in digital data management, including the critical need for leadership support and comprehensive data management planning. This aspect resonates with the strategic requirements at FUPRE, where enhancing digital records management practices necessitates addressing infrastructural and policy-related challenges while focusing on meeting the diverse needs of data users.

Collectively, these studies not only highlight the multifaceted nature of managing born-digital records but also provide a blueprint for institutions like FUPRE. They underscore the importance of a holistic approach that incorporates technological, organizational, and cultural strategies to develop effective digital records management systems. By learning from the practical solutions and innovative workflows documented in these case studies, FUPRE can better position itself to tackle the evolving challenges of the digital age.

These insights underline the imperative for a comprehensive approach to policy development and the importance of allocating resources for staff training and infrastructure to bolster digital literacy and capability in educational institutions. Future research should thus prioritize examining innovative digital records management solutions, fostering collaboration across disciplines, and assessing the impact of preservation practices on educational outcomes.

## CONCLUSION

This study delved into the strategies employed for managing born-digital records in university libraries, with the Federal University of Petroleum Resources, Effurun serving as a case study. The research revealed that FUPRE library hosts a range of born-digital records, such as text-based documents (Word and Google documents), presentations (e.g., PowerPoint), spreadsheets (e.g., Excel), PDFs, and electronic memos, thereby addressing the first research question. The investigation also established that the only formalized policy at FUPRE library pertains to the storage of born-digital records. The prevalent storage strategies include the utilization of flash drives, hard disks, CD/DVD ROMs, as well as office and personal computing devices. Preservation strategies identified were refreshing, migration, and replication, with deletion being the sole method of disposition—these findings thoroughly address the second research question.

The study concluded that significant challenges in managing born-digital records at FUPRE include technological obsolescence, inadequate digital storage facilities, copyright and intellectual property rights complications, budgetary constraints, limited awareness of digital preservation strategies, and a deficiency in IT-related staff training. These conclusions address the third research question and underscore the urgent necessity for comprehensive strategies to ensure the preservation, accessibility, and usability of born-digital records.

Acknowledging the limitations of this study's scope—centered exclusively on the FUPRE library—there is a need for caution in generalizing these findings to other settings. Future research should encompass a broader range of institutions to better understand digital records management practices within different contexts.

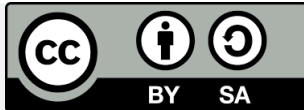
In light of the findings, the following recommendations are made to enhance the management of born-digital records in university libraries:

1. Library management should develop comprehensive policies that address the creation, preservation, transfer, and disposal of born-digital records, providing clear guidelines for library staff.
2. Training programs focused on digital records management should be routinely organized for library staff, ensuring that they are well-informed about contemporary practices in managing born-digital records.
3. Specialized in-house training on the preservation of digital resources should be conducted, and the expertise of professional consultants in this field should be leveraged.
4. Adequate funding should be allocated for the management and preservation of born-digital records, and the library should invest in reliable databases, such as D-space, for systematic storage of electronic records.

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